Multiple Banking Relationships: Do SMEs Mistrust Their Banks?

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Abstract

This article focuses on the use of multiple banking relationships by SMEs, a key issue given their strong dependence on bank financing in a context of increasing financial constraints and higher risk of credit rationing since the crisis. We investigate whether the use of multiple banking relationships is explained by firms' characteristics or by the quality of the banking relationship. We exploit the results of an original survey conducted on a sample of French SMEs in December 2012. According to the traditional theoretical framework of multiple banking, we find that older, bigger, and better-performing firms are more likely to access multiple banking relationships. We further find that innovative firms are more likely to engage in multiple banking relationships. We also highlight the explanatory power of an alternative model based on the quality of banking relationship: when the manager trusts its main bank, or when he is closer to his loan officer, the firm will be less likely to engage in multiple banking relationships.

Keywords: multiple banking relationships, trust, credit rationing, financial crisis.

JEL Classification: G21, G32

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Introduction

Like most other continental European countries, France is characterized by a prevalence of bank financing, and bank debt is the most common source of external finance for small and medium-sized enterprises (SMEs). Because of their size, SMEs cannot afford the costs of disintermediation. Private equity is an alternative financing source, but the smallest and/or not-fast-growing firms are unattractive for private equity investors. Moreover, business owners are often reluctant to rely on private equity investors because they fear losing control of their firms. Because SMEs are strongly dependent on banks, they can be financially constrained as a result of credit rationing in terms of both their short-term and long-term financing needs. According to a questionnaire addressed by the Banque de France[1] to 3,000 French SMEs over the period from October 2012 to March 2013, approximately one out of every six firms was credit rationed following a loan application. The study by Alexandre and Buisson-Stéphan (2014) also provides support for the financial crisis having increased the financing constraints of French SMEs.

Given their difficulty in accessing alternative external financing sources, the choice between one bank or several banks appears to be a key issue for SMEs to avoid credit rationing (Cosci and Melisciani 2002; De Bodt, Lobez, and Statnik 2005) or to improve their financing conditions. In a single relationship, the bank has incentives to acquire information about the borrower because the costs of monitoring become lower as the duration of the relationship increases: the bank may benefit from economies of scale, and it could smooth the cost with different types of financial services (Greenbaum and Thakor 1995). Moreover, a single bank avoids the problem of free riding that may arise with several banks. As a consequence, a single banking relationship is likely to provide SMEs protection against credit rationing and a guarantee that the interest rate is reduced for less-risky firms. However, a single bank also possesses an informational monopoly and can extract rent, thus leading SMEs to be charged non-competitive interest rates (Sharpe 1990). Moreover, having a single banking relationship exposes the borrowing SME to credit rationing if its bank undergoes a liquidity crisis (Detragiache, Garella, and Guiso 2000). To escape this "hold-up problem", SMEs may be tempted to develop

[1] Guinouard, Kremp, and Randriamisaina (2013), Quarterly selection of articles, *Banque de France*, n°192, 2013.

multiple banking relationships to protect against credit rationing. Multiple banking may allow firms to benefit from diseconomies of scale in monitoring and thus obtain more competitive interest rates (Carletti 2004).

One primary advantage of a banking relationship is thus to reduce the information asymmetry between an SME and its bank(s). Banks that lend to SMEs rely on both hard information (financial statements, collateral, and credit scores) and soft information, that is, information confidential to the lender that is obtained through social interaction (Berger, Klapper, and Udell 2001; Berger and Udell 2006). Grunert and Norden (2012) note that banks that lend to SMEs largely rely on soft information because the scope of hard information is limited compared with large firms. Many studies have shown that the diffusion of soft information offers benefits to borrowing SMEs regarding both the availability of credit and the financing conditions (Petersen and Rajan 1994; Berger and Udell 1995; Cole 1998; Elsas and Krahnen 1998; Harhoff and Körting 1998; Agarwal and Hauswald 2010; Grunert and Norden 2012). The chief executive officer (CEO) plays a key role in the diffusion of soft information and, more generally, in banking relationships because of the ownership structure of European SMEs. According to the Family Business Network, 83 percent of French firms are held by an owner-manager, who is thus the privileged interlocutor of the bank (Brunninge, Nordqvist, and Wiklund 2007). In this context, the relational trust between the CEO and the bank is an indicator of the quality of the banking relationship (Saparito, Chen, and Sapienza 2004; Hill and Scott 2015). The prevalent role of trust in a relationship has been highlighted in the literature, both because trust helps to reduce agency problems (Nooteboom, Berger, and Noorderhaven 1997) and because it helps to reduce the costs of monitoring and control (Lewicki, McAllister, and Bies 1998). More precisely, trust appears to play a strong role in the production of soft information and thus in the comfort of the bank to make decisions to support loans (Hill and Scott 2015). Following Harhoff and Körting (1998) and Lehman and Neuberger (2001), a recent strand of the literature focuses on the positive interaction between trust on the part of the bank and financing issues for borrowing SMEs (Hernandez-Canovas and Martinez-Solano 2010; Howorth and Moro 2012; Moro and Fink 2013).

This paper complements the existing literature regarding the interaction between the banking relationship and bank financing for SMEs. More precisely, our purpose is to investigate the determinants of the engagement by SMEs in multiple banking relationships. We compare the explanatory power of two analytical frameworks. The first framework relies on traditional explanations linked to firms' characteristics, and the second framework relies on more innovative explanations that are linked to the quality of the banking relationship. In the first framework, the use of single *versus*

multiple banking relationships can be driven by the financial and economic situation of the firm. To escape from the risk of hold-up, a healthy firm may favor multiple relationships (Sharpe 1990). A firm that anticipates financial distress may also develop multiple relationships to favor risk sharing and support from its creditors in case of financial difficulties (Detragiache, Garella, and Guiso 2000). These arguments primarily rely on the presence of information asymmetry to the detriment of banks. In the second framework, we analyze the determinants of multiple banking relationships in light of the quality of the banking relationship. We use trust on the part of the CEO of the SME as a primary indicator of the quality of the banking relationship. Because information asymmetry to the detriment of firms also exists, the trust that a firm feels toward its main bank plays a strong role in the construction of the relationship. In the case of mistrust, firms could be tempted to engage in multiple banking relationships. Following the framework of trust provided by Morgan and Hunt (1994), we test the impact of several dimensions of trust, its antecedents and its consequences on the likelihood of a firm to engage in multiple banking relationships.

This paper makes several contributions. First, it contributes to the literature about banking relationships. Multiple banking relationships are rarely analyzed based on the quality of the relationship between the firm and its main bank. Moreover, contrary to previous studies that have focused on the quality of the relationship from the point of view of the bank (that is the loan officer's point of view), we analyze this relationship from the point of view of the key individual, the CEO. Second, we created original proxies to assess the trust that firms have in their banks. This unique dataset is provided by a questionnaire addressed to managers of French SMEs in 2012. CEOs were asked to provide answers about financing conditions and various aspects of their relationship with their bank(s) during the period of 2007-2012. This period is interesting because it includes the emergence of financial and economic crises that may have played a role in banking relationships. The volume of loans granted by banks decreased since the crisis, and the financial vulnerability of banks increased. However, according to Kremp and Sevestre (2013), this decrease appears to be generated by a decrease in demand rather than by pure credit rationing. Thus, this paper helps to investigate the "demand size" aspect of the banking relationship in a context of increasing uncertainty that makes the banking relationship worthwhile for the two players (Albertazzi and Marchetti 2010). The use of responses to the survey regarding the investment or financing needs of SMEs also enriches the empirical evidence regarding the traditional framework about banking relationships.

Our sample comprises 94 French SMEs that responded to the survey in December 2012. We exploit the responses to the survey, and we also extracted accounting data from the ALTARES database. Our

results are twofold. First, we provide support for the explanatory power of some firms' characteristics in terms of engagement in single or multiple banking relationships: larger, older, and better-performing firms are more likely to develop multiple banking relationships, as are innovative firms. Second, we provide original results that show that the quality of the banking relationship affects the access to multiple banking relationships. According to our hypothesis, we find that when the manager trusts his main bank, he is less likely to engage in multiple banking relationships. Our results also highlight the role of the distance between the manager and his main bank: when the manager is closer to his loan officer, he is less likely to engage in multiple banking relationships. However, these explanatory frameworks are not mutually exclusive: among the models tested, the combined models that include both firms' characteristics and proxies for the quality of banking relationships provide the best predictive power for the likelihood to engage in multiple banking relationships.

The remainder of the paper is structured as follows. In section 2, we analyze the theoretical background and empirical evidence on the two alternative frameworks. Section 3 presents the data and summary statistics in addition to the results of the univariate analysis. Our main empirical findings are provided in section 4. Section 5 discusses the results and concludes.

Theoretical Background and Empirical Review

Framework One: Firms' Characteristics and Multiple Banking

Theoretical Framework. Banking theory demonstrates that there exists a link between firms' characteristics and their choice between single and multiple banking relationships. Borrowing from several banks generates higher monitoring costs per euro borrowed (Berger, Klapper, and Udell 2001). As a consequence, for small firms, banks' incentives to monitor are lower, and the process of granting credit is likely to be transaction-based rather than being the result of a full banking relationship. Conversely, for larger firms that borrow higher volumes, several banks can invest in monitoring activities because of economies of scale. Thus, according to this theory, the larger the firm is, the easier it is to engage in multiple banking relationships. From the point of view of the bank, the argument for risk sharing also favors multiple banking for firms that borrow large volumes. Regarding the age of the firm, a young firm is more likely than an older one to have a single banking relationship for two reasons. First, it is difficult for a young firm to attract several banks because of the high information asymmetry regarding its growth prospects and its risk. Moreover, a single bank has more incentives to monitor the firm because of the absence of free riding and because of economies of scale in monitoring activities. This gives the young firm protection against credit rationing. Moreover, when a firm grows,

this information asymmetry decreases because some financial information becomes public. Consequently, the need for a single bank, with high incentives to monitor, becomes less important than the need for risk sharing and the search for new financing as the firm become older. We further posit hypothesis H1.

H1: Smaller and younger firms are less likely to engage in multiple banking relationships.

Second, the choice between single and multiple banking is impacted by the performance of the firm and its default risk. The theoretical literature provides two alternative frameworks to explain this impact. On one side, a single banking relationship incites the bank to monitor the firm to collect information about its performance and its risk (Fama 1985; Haubrich 1989; Greenbaum and Thakor 1995). Thus, well-performing firms may benefit from a single relationship: they are protected against credit rationing, and their bank applies a low interest rate. On the other side, Sharpe (1990) shows that a single relationship provides an informational rent to the bank because other banks that do not know the risk of the firm fear adverse selection. This informational monopoly power makes the firm captive. As a consequence, a firm may not benefit from low interest rates even if it is performing well, and it could be credit rationed if the bank suffers from a liquidity crisis (Detragiache, Garella, and Guiso 2000). In this context, multiple banking relationships allow the firm to escape from informational monopoly power because at least two banks are well informed about its probability of success, and thus there is competition. Therefore, a well-performing firm may have an interest in developing multiple banking relationships. Because of these two different explanations, we posit hypothesis H2a and alternative hypothesis H2b.

H2a: High-performing firms are less likely to engage in multiple banking relationships.
H2b: High-performing firms are more likely to engage in multiple banking relationships.

Third, the level of default risk could also affect the choice between single and multiple banking relationships. On the one hand, the manager could favor multiple banking relationships to be better supported in case of financial distress during a debt renegotiation process. The presence of several banks allows risk sharing, protects banks from adverse selection and facilitates financial support from several creditors (Detragiache, Garella, and Guiso 2000). On the other hand, the presence of several banks could also create free riding in monitoring (Carletti 2004) and could reduce the incentive for the main bank to seek information and to finance a firm in financial distress. Thus, the manager could also be tempted to choose a single banking relationship to avoid credit rationing. In this vein, the model of Bolton and Scharfstein (1996) indicates that concentrated lending relationships facilitate debt

renegotiation, at least for low-credit-quality firms. Because of these two different explanations, we posit hypothesis H3a and alternative hypothesis H3b.

H3a: Firms anticipating financial distress are less likely to engage in multiple banking relationships.

H3b: Firms anticipating financial distress are more likely to engage in multiple banking relationships.

Finally, because confidentiality is valuable for firms engaging in research and development (Bhattacharya and Chiesa 1995), an innovative firm could be less inclined to disclose information to its bank because of the need for confidentiality. Yosha (1995) and Bhattacharya and Chiesa (1995) show that a situation with multiple creditors may lead to the disclosure of strategic information to banks and therefore to competitors. Thus, Yosha (1995) shows that innovative firms prefer a single bank to reduce financing costs because of a lower need for (costly) disclosure. Similarly, we posit hypothesis H4.

H4: Innovative firms are less likely to engage in multiple banking relationships.

Empirical Evidence. The connection between firm size and banking relationships is supported by empirical evidence. Berger, Klapper, and Udell (2001) show that small firms are more likely to borrow from a single bank because of the high costs of monitoring. This result was confirmed by Harhoff and Körting (1998) for a sample of German firms and by Ziane (2003) for a sample of French SMEs. The idea of a life cycle in banking relationships with the probability of multiple banking relationships increasing with the age of the borrower was successfully tested by Harhoff and Körting (1998) and by Farinha and Santos (2002) for Portuguese SMEs (hypothesis H1). Regarding performance, empirical evidence provides strong support for a negative relationship between SMEs' performance and the use of multiple banking (hypothesis H2a) in several countries: the United States (Detragiache, Garella, and Guiso 2000), Belgium (Degryse and Ongena 2001), France (Ziane 2003), and Italy (Castelli, Dwyer, and Hasan 2010). Empirical evidence regarding default risk was provided by Cosci and Meliciani (2002): they find that the number of banking relationships increases with firms' leverage and the riskiness of the sectors in which the firms operate. Moreover, Harhoff and Körting (1998) report that firms in financial distress have several relationships and that the number of creditors has a positive influence on the resolution of this distress (hypothesis H3b). Finally, regarding innovation, the empirical evidence is mixed. Bellucci, Favaretto, and Giombini (2014) recently showed that innovative firms are less likely to suffer from credit rationing, which reduces their need for developing multiple banking relationships (hypothesis H4). However, Harhoff and Körting (1998) and Detragiache, Garella, and Guiso (2000) find a negative impact of the innovation of products on the probability of having a single banking relationship.

The literature also analyzes the consequences of single and multiple banking relationships on the cost and availability of credit. It appears that the positive value of a single banking relationship (lower information asymmetry and agency costs) appears to outweigh hold-up problems. Petersen and Rajan (1994), Cole (1998) and Cotugno, Monferra, and Sampagnaro (2013) show that US SMEs bear higher interest rates and are more credit constrained when they maintain multiple banking relationships. In Germany (Harhoff and Körting 1998) and Belgium (De Bodt, Lobez, and Statnik 2005), empirical studies also show that multiple banking firms are more credit constrained and suffer from higher credit costs. Thus, given the high costs of multiple banking highlighted by the literature, we wonder why SMEs widely use multiple banking. Castelli, Dwyer, and Hasan (2010) report that 90 to 95 percent of firms develop multiple banking relationships in continental Europe, particularly in France (this ratio is lower in the United Kingdom (UK) and in Nordic countries). Consequently, we question to what extent multiple banking could be connected with features other than the financial characteristics of firms, and we propose to test an alternative framework that captures the quality of the banking relationship from the point of view of the borrower.

Framework Two: Trust, Quality of the Banking Relationship and Multiple Banking

Theoretical Framework. The impact of social interactions in banking relationships and the determinants of a successful banking relationship have been traditionally explored in the banking marketing literature. This literature posits that a "good" customer relationship is thought to be an important determinant of perceptions of service quality (Zeithaml, Berry, and Parasuraman 1988). Banking relationships are built on not only the core service provided (that is, the loan) but also on general aspects that contribute to customer (that is, the SME) satisfaction. It is also in the interest of banks to establish and maintain long-term relationships with customers (Ritter 1993).

Trust plays a strong role in the construction of relationships and, consequently, of banking relationships. Trust is a cross-disciplinary concept studied by psychologists, economists and sociologists. Bhattacharya, Devinney, and Pillutla (1998) remind us that the economic view of trust focuses on how institutions are established and incentives are used to reduce the uncertainty associated with transactions. In marketing, the theoretical background relies on the commitment-trust theory of relationship marketing originally proposed by Morgan and Hunt (1994). According to their theory, trust exists "when one party has confidence in an exchange partner's reliability and integrity". Thus, trust is central to successful relationship marketing because it encourages marketers to: (1) cooperate with the exchange partner, (2) avoid alternative short-term strategies in favor of long-term benefits provided by

the relationship and (3) avoid high-risk options because they believe that the partner will not act opportunistically.

The study of McKechnie, Ennew, and Read (1998) analyzes the quality of banking relationships. The following three aspects of banking relationships were measured via a survey distributed by post: trust in the bank, approachability (nature of the relationship with the loan officer) and information flows. Mukherjee and Nath (2003) more specifically focus on trust in the context of online banking relationships. They rely on the commitment-trust framework of Morgan and Hunt (1994) to characterize the dimensions, antecedents and consequences of trust in a structural model tested via a survey. First, they highlight two dimensions of trust: (1) the perceived risk as defined by Mayer, Davis, and Shoorman (1995) that affects the level of trust of the manager toward the firm's bank and (2) the reputation of the bank. According to these dimensions, the manager should be sensitive to some of the bank's features. Second, the authors identify three antecedents of trust: (1) shared value (the extent to which partners have beliefs in common about ethics, security and privacy; see Morgan and Hunt 1994), (2) communication (informal and formal sharing of meaningful and timely information; see Anderson and Narus 1990) and (3) opportunistic behavior (derived from the presence of information asymmetry in the transaction process; see Williamson 1975). Finally, Mukherjee and Nath (2003) focus on the consequences of trust, which are commitment and the desire to maintain a valued relationship (Moorman, Zaltman, and Deshpande 1992).

In a banking relationship, trust helps to reduce agency problems (Nooteboom, Berger, and Noorderhaven 1997) because it helps reduce the costs of monitoring and control (Lewicki, McAllister, and Bies 1998). If a manager trusts the firm's bank, he will be more interested in disclosing soft information. On the side of the bank, this disclosure could lead to decisions to grant loans (Hill and Scott 2015). Conversely, if the manager mistrusts the firm's main bank, he will develop multiple banking relationships to improve credit availability. Consequently, we posit hypothesis H5:

H5: A firm that mistrusts its main bank is more likely to engage in multiple banking relationships.

Empirical Evidence. The financial literature focuses on the interaction between the quality of the banking relationship and the financing constraints of SMEs. For instance, seminal studies (Petersen and Rajan 1994; Cole 1998) rely on the NSSBF[2] inquiry (a questionnaire performed on a large sample of US SMEs) to exploit quantitative aspects of the banking relationship: its age and its length (as

[2] National Survey of Small Business Finances.

measured by pre-existing financial services variables: checking accounts, savings accounts, loans, and financial management services). Lehman and Neuberger (2001) address a questionnaire to loan officers of three German banks to capture social aspects of the banking relationship with multi-item scales related to positive experience in the past, willingness of the borrower to inform them about problems, obligation to the borrower and stability of the relationship. They show that financing conditions are influenced by not only firms' characteristics and credit risk variables but also the previously defined social aspects.

However, the role of trust as a primary indicator of the banking relationship remains a less-examined issue in the SME financing literature. Harhoff and Körting (1998) first tested the impact of a binary variable named a "trust variable" (managers had to indicate to what extent they consider their banking relationship as being characterized by mutual trust) on a sample of German SMEs; their results indicate that SMEs characterized by concentrated borrowing and a trusting banking relationship obtained better financing conditions. More recently, Hernandez-Canovas and Martinez-Solano (2010) ask managers whether they think that banks consider trust in granting loans; their results show a positive association with this indirect measure of trust and better access to financing at better prices for Spanish SMEs. Evidence for similar interactions between trust and interest rates is provided by Howorth and Moro (2012) based on a sample of Italian SMEs. Finally, Moro and Fink (2013) use a survey addressed to the loan officers of nine Italian banks: they note that SMEs that are considered highly trustworthy by their banks are less credit constrained, particularly regarding short-term financing.

Although this stream of literature focuses on trust to explain credit availability and the financing conditions of SMEs, it does not investigate the link between trust and the use of multiple banking. Moreover, previous studies assess trust from the point of view of the bank. In contrast with these studies, we estimate trust from the viewpoint of the manager and its impact on the use of multiple banking.

Data and Univariate Analysis

Sources

Accounting data were extracted from a French database, ALTARES, provided by Dun and Bradstreet, which offers extensive coverage of privately held French firms. The ALTARES database contains comprehensive accounting and financial data, the business sector code, and the age of the firm.

Data about the quality of banking relationships were obtained from a questionnaire that we designed. In addition to firms and managers' characteristics, the questionnaire inquired about investment policy and financing needs. Then, the managers were asked questions related to the characteristics of banking relationships: the use of single or multiple banking, and several aspects of the quality of banking relationships, including several dimension of the trust that the CEO feels toward the firm's main bank. The survey was sent by mail to managers of French SMEs in December 2012. It was addressed to the CEOs of the SMEs. 908 managers opened the email. Phone calls were made to follow up on some partially completed questionnaires, leading to a sample of 94 SMEs. Of these 94 SMEs, 25 did not fully complete the section of the questionnaire regarding the banking relationship, and 13 firms reported missing accounting data in ALTARES. These steps and the composition of the sample are summarized in Table 1.

Insert table 1 about here

Descriptive Statistics

Table 2 provides descriptive statistics. The definitions of the variables are provided in Appendix A. Considering the three criteria required in the European definition of SMEs (workforce < 250 employees, net sales < 50 million euros, and total assets < 43 million euros), we note that the SMEs in the sample belong to the "small" range of SMEs. They exhibit a median workforce of 31 employees, median sales of 4.3 million euros and median assets of 2.6 million euros. They appear to be quite mature, with a median age of 21 years. The median leverage of 63.9 percent is close to the threshold usually used in financial analysis to assess the financial structure (two tier of debt, or one tier of equity). Regarding the business sector, the industrial sector is prevalent, with 43.1 percent of the SMEs in this business, followed by services (24.3 percent). Of the total, 16.8 percent answered yes to the following question: "Is your firm innovative according to the definition provided by the French Tax Code?"[3]

Insert table 2 about here

Regarding multiple banking, the respondents were asked about the use of multiple banks (dummy variable Multibank): 74 firms reported multiple banking relationships (Multibank equals one), and 20

[3] Under article 44 sexies-0 A of the French Tax Code, a young innovative company is an SME that has R&D expenditures equal to at least 15% of its deductible expenses for the fiscal year.

firms reported single banking relationships (Multibank equals zero). Thus, 79 percent of the firms reported multiple banking relationships in our sample. This result is consistent with, albeit a bit lower than, the data provided by Ongena and Smith (2000) and more recently by Castelli, Dwyer, and Hasan (2010) for continental European countries: the latter report a multiple banking ratio of 95 percent for their sample of Italian SMEs, and the former report a percentage of 85 percent.

Variables and Univariate Analysis

Multiple Banking and Firms' Characteristics (Framework One). According to hypothesis H1, we posit that the age of the firm (Age) and its size (using Workforce, Assets and Sales) exhibit a positive relationship with the use of multiple banking (the definitions of the variables are provided in Appendix A). In hypotheses H2a and H2b, we assume contrasting expectations regarding the impact of performance on multiple banking: the performance variables are one-year sales growth (Growth), return on assets (ROA) and return on equity (ROE). We constructed the instrumental variable VIROE to correct reverse causality (see below). We also assume contrasting expectations regarding the anticipated default risk (hypotheses H3a and H3b). We use the following variables: the liquidity ratio (Liquidity) and the leverage ratio (Leverage) to proxy for this risk. In addition, according to hypothesis H4, we assume that innovative firms are more likely to report a single banking relationship. We use a dummy variable (Innovation) that equals 1 if the SME answers "no" to the question "Is your firm innovative according to the definition of the French Tax Code?" and 0 otherwise.

Differences in investment and financing needs are also expected to have an impact on the use of multiple banks; thus, we include several control variables to capture these needs. These variables are the responses to the questions that we asked following the NSSBF inquiry (see, for example, Cole 1998). We use two proxies for financial needs: the dummy variable LT debt-need (that equals1 if the firm has applied for a long term loan since 2007) proxies for long term needs, and the ratio of working capital to net sales (Working capital) proxies for short-term needs. In addition, Invest-need is a dummy variable that equals 1 if the SME invested since the crisis and 0 otherwise.

Insert table 3 about here

Table 3 provides statistics and univariate analysis for the previously mentioned variables for the sample of 81 SMEs with available accounting data[4]. Among them, 80 percent (64) reported multiple banking relationships, and 20 percent (17) reported a single banking relationship. The first important

[4] We provide correlation matrices in Appendices B and C.

figures are related to the age and size of the firms: they highlight significant differences between firms with several banks and firms with one bank. More precisely, firms with several banks appear to be older and larger (in terms of Assets and Sales) than firms with one bank in terms of both the mean and median. These preliminary results are consistent with hypothesis H1. Univariate tests also highlight the significance of the variable Innovation, which is higher for the group of SMEs with multiple banks (20.6 percent of the firms with multiple banking relationships are innovative *versus* 6 percent of the firms with one bank). This result is not consistent with H4, but it is consistent with some of the empirical evidence: innovative firms do not seem to be reluctant to disclose information to several banks.

Regarding the control variables, firms with several banks exhibit higher short-term financing needs, with an average working capital ratio of 19.7 percent, than firms with one bank, which have an average working capital ratio of 5.3 percent. Finally, the variable Invest-need also differs significantly between the two groups: 47 percent of the respondents invested since the crisis in the "single banking group," whereas only 26 percent of the "multiple banking group" invested. Thus, it appears that SMEs that reported a single banking relationship were not constrained in terms of investments over the period.

Multiple Banking and the Quality of the Banking Relationship. The variables presented in this framework are extracted from the responses to the survey addressed to CEOs. According to hypothesis H5, we use several proxies to assess trust. We rely on the characterization of trust proposed by Mukherjee and Nath (2003) to build variables that capture the antecedents of trust and its consequences. One main antecedent of trust is information asymmetry between the bank and the SME. We exploit two questions from the survey as proxies for this issue: Rating knowledge and Bank knowledge. Rating knowledge equals one if the CEO thinks that he has knowledge of the rating process of the firm's main bank and zero otherwise. Bank knowledge equals one if the manager thinks that he has knowledge about how a bank is working and zero otherwise. Another important antecedent of trust is communication and sharing of information. We use the dummy variable Frequency as a proxy for the frequency of exchanges between the CEO and the bank. Frequency equals one if the SME answers "yes" to the question "Do you have exchanges on at least a weekly basis with the loan officer of your main bank" and zero otherwise. Finally, we assess the consequences of trust, that is, the desire to build a valuable relationship, using the variable Rate. Rate is a dummy variable that equals one if the manager answers "no" to the following question: "Do you systematically look for the lower interest rate when applying for credit?" Conversely, Rate equals zero if the manager's aim is always to find a lower rate by seeking competition among banks.

We include a control variable called Distance. Distance is a dummy variable that equals one if the SME reports that its loan officer is located in a business center and zero if the officer is located in a bank branch. Distance is treated in the literature as another dimension of the quality of the banking relationship. As noted by Degryse and Ongena (2005), the operational distance, that is, the physical proximity of the firm to its bank, can help reduce information asymmetry. Banks that are closer to the borrowing firms should need to exert less effort to monitor the firm and should benefit from more soft information. Degryse and Ongena (2005) actually show that loan rates decrease with the distance between the firm and the lending bank for Belgian SMEs. Conversely, Alessandrini, Presbitero, and Zazzaro (2009) find no impact of operational distance on credit availability for Italian SMEs.

Finally, we use CEO tenure as a second control variable: this dummy variable equals one if the CEO has been in the position for more than five years (long-term position) and zero otherwise. We assume that CEO tenure is likely to have an impact on the quality of the banking relationship. A strand of the SME literature analyzes the financing decisions of SMEs in light of their CEOs' demographics. For instance, Bruns and Fletcher (2008) find a positive impact of CEO tenure on the probability of the loan officer supporting credit for Swedish SMEs, whereas Orens and Reheul (2013) use CEO tenure as an explanatory factor for the cash holdings of Belgian SMEs.

Insert table 4 about here

Table 4 exhibits the results of the univariate analysis on the sample of 69 firms that fully completed the banking relationship section of the survey. Among them, 59 (85 percent) have multiple banking relationships, and 10 (15 percent) have a single banking relationship.

Regarding the full sample of 69 firms, it appears that 55.1 percent of the respondents reported knowledge about the general working process of a bank (Bank knowledge), but of the respondents, only 37.7 percent answered that they have knowledge about the rating process of their bank (Rating knowledge). A vast majority of the respondents (80.6 percent) reported regular exchanges (on a weekly basis) with the loan officer of their main bank (Frequency). In addition, only 30.3 percent of the respondents answered that they are not systematically looking for the lowest price when applying for a loan (Rate). Almost one-half of the SMEs in our sample work with a loan officer located in a business center (the variable Distance has a mean of 44.9 percent), and the others work with a loan officer housed in a bank branch. Finally, for 89.5 percent of the SMEs, the CEOs have had a long tenure.

The univariate analysis indicates differences between the two groups. First, regarding knowledge, 10 percent of the respondents in the "single banking" group reported knowledge of the rating process

(Rating knowledge), whereas 42.4 percent of the respondents in the "multiple banking" group reported such knowledge. These results are consistent with the analysis of Bank knowledge, which is also significantly higher for the "multiple banking" group than for the "single banking" group. To summarize, these preliminary results tend to support the idea that firms with one bank exhibit lower knowledge of the bank process in general than firms with multiple banks. In addition, the dummy variable Rate is significantly higher for the single bank group: in this group, 60 percent of the respondents reported that they do not search for the lowest loan price; conversely, more than 75 percent of the respondents in the "multiple banking" group search for a lower interest rate when applying for credit.

Regarding the control variables, only 10 percent of the respondents in the "single banking" group work with a loan officer located in a business center. This result implies that conversely, 90 percent of the respondents in this subsample work with a loan officer located in a bank branch, thus with a lower distance. For the multiple banking subsample, the distance is significantly higher because 50.8 percent of the respondents work with a loan officer located in a business center. SMEs with several banks also exhibit a significantly higher percentage of long-tenured CEOs (93.1 percent) than SMEs with one bank (77.8 percent).

Empirical Findings

The Econometric Specification

Econometric Model and Estimation Method. The endogenous variable is a dummy variable (Multibank); Multibank equals one if the firm has multiple banking relationships and zero if the firm has a single banking relationship. We use the two sets of explanatory variables to test the previously defined analytical frameworks. We run models for framework one, models for framework two, and we also run combined models by integrating the explanatory variables of the two analytical frameworks.

We use a bivariate probit model. y_i is the dependent variable for firm i, x_i is the vector of independent variables for firm i, and β is the vector of coefficients.

$$\begin{aligned} y_i &= 1 \quad if \quad \beta x_i + \varepsilon_i > 0 \\ y_i &= 0 \quad if \quad \beta x_i + \varepsilon_i \leq 0 \end{aligned} \tag{1}$$

We assume the standard normal distribution for the disturbance, e_i. Let F be the normal distribution. The probability that the dependent variable y_i equals one (that is, firm i has multiple banking relationships) is

$$\begin{aligned} \text{Prob}\{y_i = 1\} &= \text{Prob}\{\beta \boldsymbol{x}_i + \varepsilon_i > 0\} = \text{Prob}\{\varepsilon_i > -\beta \boldsymbol{x}_i\} \\ &= 1 - \text{Prob}\{\varepsilon_i \leq -\beta \boldsymbol{x}_i\} = F(\beta \boldsymbol{x}_i) \end{aligned} \tag{2}$$

The probability that the dependent variable y_i equals zero (that is, firm i has a single banking relationship) is

$$\text{Prob}\{y_i = 0\} = \text{Prob}\{\beta \boldsymbol{x}_i + \varepsilon_i \leq 0\} = \text{Prob}\{(\varepsilon_i \leq -\beta \boldsymbol{x}_i)\} = F(-\beta \boldsymbol{x}_i) \tag{3}$$

For each model, the vector β is estimated using the maximum likelihood. There is no important problem of multicollinearity (the variance inflation factors are all inferior to 10)[5]. We corrected the models for heteroscedasticity.

The McFadden likelihood ratio index (McFadden R^2) measures the goodness of fit of our estimated models:

$$\text{McFadden } R^2 = 1\text{-}\ln L/\ln L_0 \tag{4}$$

where L is the likelihood of the estimated model, and $\ln L_0$ is the likelihood of the model with only a constant term (for more details, see Greene 2011).

The global significance of our model is assessed by the likelihood-ratio test. The null hypothesis is the nullity of all of the coefficients. Under H_0, $S=2(\ln L-\ln L_0)$ follows a chi-square distribution with K-1 degrees of freedom, where K is the number of exogenous variables. The significance of each coefficient of the vector β is also assessed using the likelihood-ratio test. The null hypothesis is the nullity of the coefficient β_i. L is compared to $L_{\beta i=0}$, the likelihood of the model estimated under H_0. Under H_0, $S=2(\ln L-\ln L_{\beta i=0})$ follows a chi-square distribution with 1 degree of freedom.

We provide two other indicators of the goodness of fit: the Akaike information criterion (AIC) and the rate of correct classification. AIC =-2lnL-2K, where K is the number of exogenous variables. The lower the criterion is, the better the goodness of fit. The rate of correct classification is equal to the

[5] VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient between the independent variable j and the other independent variables.

ratio of the number of firms for which the endogenous variable is correctly predicted to the total number of firms.

Treatment of Missing Data. The size of our sample is reduced because of missing data (see Table 1). Framework one suffers from missing accounting data: among 94 firms, accounting data are available for only 81. Framework two suffers from a lack of responses to the survey. Among 94 firms, only 69 answered the questions about banking relationships. Furthermore, only 59 firms answered these questions and provided accounting data. To test the robustness of our econometric models of frameworks one and two and to run a combined model integrating the two frameworks, we impute values for missing data (as in, for instance, Astebro and Bernhardt 2003 and Fairlie and Robb 2007)

We use two different methods for the imputation of missing data: regression imputation and multiple imputation[6]. First, in regression imputation, we consider the variables with missing data one by one as dependent variables of a regression. A linear regression is used for continuous variables, and a logistic regression is used for dummy variables. The imputed variables are the values predicted by these regressions. Second, we use a multiple imputation method described by Rubin (1976; 1987), more precisely, multivariate imputation by chained equations (Van Buuren and Groothuis-Oudshoorn 2011). Missing data are imputed by considering the statistical links between the different variables thanks to an iterative assessment. For the continuous variables, we use the predictive mean matching method; for the dummy variable, we use a linear discriminant analysis. Treatment of missing data allows us to build two samples of 94 observations for each econometrical model assessed.

Treatment of Reverse Causality. The theoretical framework assumes that the performance of a firm explains the choice between single and multiple banking relationships (hypotheses H2a and H2b). However, some empirical studies also show that multiple banking relationships may have an influence on firm performance. Actually, multiple banking relationships can soften the control that banks exert and, as a consequence, reduce managers' incentives to exert significant effort (Foglia, Laviola, and Reedtz 1998). An indirect effect can also play a role because multiple banking relationships influence the cost and availability of credit (Bonfim, Dai, and Franco 2009; Shikimi 2013). Moreover, Castelli, Dwyer, and Hasan (2010) find a negative impact of multiple banking relationships on SMEs' performance. Thus, a double causality can exist between the dependent variable and the independent variable ROE because the number of banks in 2011 could explain the financial return in 2011. To avoid

[6] See, for instance, Allison (2001) and Chen and Astebro (2003) for more details.

this problem of reverse causality, we construct an instrumental variable. We consider the average financial return from 2007 to 2010 (VIROE, see Appendix A). This past value cannot be influenced by the current value of the dependent variable.

Firms' Characteristics and the Use of Multiple Banking Relationships

According to the first analytic framework (hypotheses H1 to H4), we estimate the following model:

Proba (MULTIBANK = 1) = Function (SIZE, AGE, PERFORMANCE, RISK, INNOVATION, CONTROL VARIABLES)

Table 5 provides the results of the probit models. The first model (model I) is run on the initial sample with the available accounting data (column Ia). Then, this model is run on the full sample of 94 SMEs after imputation of the missing data via multiple imputation (column Ib) and regression imputation (column Ic). The second model (model II) uses VIROE instead of ROE to control for reverse causality. It is run on the initial sample of 81 firms (column IIa); then, we control for robustness after imputation of the missing data by multiple imputation (column IIb) and regression imputation (column IIc). The McFadden R^2 ranges between 26.42 percent and 36.96 percent. The models exhibit rates of reclassification that range between 81.2 percent and 86.2 percent.

Insert table 5 about here

Several results emerge. First, according to hypothesis H1, we find that the size of the firms (Assets) increase their probability to engage in multiple banking relationships. This result is in line with the empirical literature (Harhoff and Körting 1998; Berger, Klapper, and Udell 2001; Ziane 2003). Second, according to hypothesis H2b, we find that the best performing firms - looking at the return on equity ROE - are more likely to engage in multiple banking relationships. This result is robust when VIROE is used instead of ROE. Thus, the anticipated positive consequence of a single relationship seems to be outweighed by the desire of protection against monopoly power. Contrary to previous studies (Detagriache, Garella, and Guiso 2000; Degryse and Ongena 2001; Ziane 2003; Castelli, Dwyer, and Hasan 2010), our findings tend to support the idea that, during the 2007-2012 period, in spite of the persistence of the crisis, well performing firms tried to protect themselves against the hold-up problem.

Third, the leverage ratio (Leverage) appears to have a positive impact on the decision to engage in multiple banking relationships. As we used Leverage as a proxy for anticipated default risk, this result gives some support to hypothesis H3b: a firm anticipating financial distress could favor multiple banking relationships to obtain better support in case of default. On the part of the bank, higher leverage is also

consistent with a higher need for sharing risk. This result is consistent with the findings of Harhoff and Körting (1998).

Contrary to hypothesis H4, the innovative characteristic of firms (variable Innovation) has a positive impact on the use of multiple banking relationships. This result is in line with empirical evidence that shows that innovative firms are not reluctant to disclose information to multiple lenders (Harhoff and Körting, 1998 and Detragiache, Garella, and Guiso, 2000). Moreover, the desire of the main bank to share risk with other lenders is higher for innovative firms that appear to be more risky, and that exhibit few tangible assets, making it more difficult for them to provide collateral.

In addition, the control variables provide interesting results. The variable Working capital, a proxy for short-term financing needs, exhibits a positive relationship with the use of multiple banking: SMEs with high short-term financing needs incur a higher risk of credit rationing; thus, they are more likely to work with multiple banks. The variable Invest-need has a negative impact on the use of multiple banking: SMEs that invested during the crisis will perhaps exhibit less financing needs, leading to less use of multiple banking at the time that they completed the survey. An alternative explanation provided by the literature (Von Thadden 1995) is that investment financing requires a single banking relationship because monitoring activity and time smoothing of profits makes long-term financing possible for banks.

Quality of the Banking Relationship and the Use of Multiple Banking

According to the second analytical framework, we test models that include proxies for trust and two control variables (Distance and CEO tenure).

Proba (MULTIBANK = 1) = Function (TRUST, CONTROL VARIABLES)

Table 6 provides the results of the probit models. The first model (model III) is performed on the sample of SMEs with available responses to the survey (column IIIa). Then, we control for the robustness of this model using the full sample of 94 SMEs after the imputation of missing data using both multiple imputation (column IIIb) and regression imputation (column IIIc). Model (IV) presents an alternative empirical model of framework two, including the CEO tenure. Model IV is run on the initial sample of firms (column IVa); then, we control for the robustness of model IV after imputation of missing data with both multiple imputation (column IVb) and regression imputation (column IVc).

Insert table 6 about here

The McFadden R^2 ranges between 31.39 and 50.41 percent. The models exhibit rates of reclassification that range between 85.1 percent and 92.6 percent.

A first finding is the strong impact of the two proxies of trust. The proxy for the antecedent of trust, Rating knowledge, has a positive impact on the use of multiple banking. However, this impact is contrary to our expectation: if the CEO reports knowledge of the rating process of the firm's main bank, he is more likely to engage in multiple banking relationships. A possible explanation is that higher transparency from the main bank may lead SMEs to boost competition between different banks. Another explanation is consistent with Sharpe (1990): if the manager knows well the rating process, he becomes conscious of the hold-up phenomenon and tries to avoid it by developing multiple banking relationships. The model also highlights, as expected in Hypothesis H5, a negative impact of the consequence of trust, that is, the desire of the manager to build a valuable relationship with his main bank (variable Rate), on the likelihood of multiple banking relationships**.** When the manager's aim is not to systematically find the lower rate, he is more likely to have a single bank. When the manager trusts the firm's main bank, he wants to develop a relationship founded on something other than price. He thus values a single banking relationship in which he can disclose more soft information to the bank. This result is consistent with the empirical studies that highlighted the strong role of soft information in the availability of credit (Berger and Udell 2002; 2006). The variable Frequency also has a positive, albeit not very significant, impact on the use of multiple banking relationships, contrary to our expectations: we anticipated that frequent exchanges between the firm and its main bank could improve trust. However, this proxy remains imperfect because the survey does not make us aware of the natures of the exchanges. One possible explanation is that this variable may reveal some financial problems (particularly regarding the operations of the account), thus leading to a search for others lenders.

Another result is the positive impact of the control variable Distance on the use of multiple banking. When the manager of an SME is more geographically distant from his loan officer (that is, when the officer is located in a business center rather than in a branch), he is more likely to engage in multiple banking relationships. This result is consistent with studies that show that a lower distance leads to better financing conditions and credit availability (Degryse and Ongena 2005; Alessandrini, Presbitero, and Zazzaro 2009). Finally, CEO tenure also appears to have a positive impact on the use of several banks: when the CEO has had a long tenure and is thus more experienced, he is more likely to engage in multiple banking relationships. This result may be explained by the fact that the experience of the CEO enhances trust from banks, thereby making it easier for firms to engage in multiple relationships.

Firms' Characteristics and the Quality of the Banking Relationship: The Effects of Interactions on the Probability of Engaging in Multiple Banking Relationships

Using imputation of missing data, Table 7 provides models that include both variables from framework one and variables from framework two from the common sample of 94 SMEs (with imputation of missing data). We run four different global models combining the models from frameworks one and two[7]. Columns Va, VIa, VIIa and VIIIa present the models run on the sample built by multiple implementation. Columns Vb, VIb, VIIb and VIIIb presents the models run on the sample built by regression implementation.

Insert table 7 about here

Insert table 8 about here

Table 8 provides a comparison of the goodness of fit values of the models derived from framework one, from framework two and from the combined models regarding their ability to explain the presence of single versus multiple banking relationships. The results show that the quality of the banking relationship (framework two) provides a better explanation for this choice than the characteristics of the firms (framework one): the McFadden R^2 is higher (except for one regression), the AIC and the BIC (Bayesian Information or Schwarz criterion) are always lower, and the rates of correct classification are always higher. For instance, the better rate of correct classification is provided by framework two applied to the sample imputed by regression: 92.6 percent (Model III).

Furthermore, tables 7 and 8 indicate that the combined models improve the explanation of multiple banking relationships. First, the explanatory variables of the two frameworks remain significant in the combined models. The explanatory powers of the global models are high, with McFadden R^2 values ranging between 57.47 and 71.84 percent. The rates of correct classification vary between 88.3 and 94.7 percent. The AIC and the BIC are lower for the combined models. In summary, it appears that the two explanatory frameworks are not mutually exclusive because combining the financial characteristics of SMEs with proxies for the quality of the banking relationship improves the ability of the model to explain the use of banking relationships by SMEs.

[7] We combined model III with model I (model V) and II (model VI). Then, we combined model IV with model I (model VII) and II (model VIII).

Conclusion

In France, similar to most countries in continental Europe, a vast majority of SMEs develop multiple banking relationships. We examined the determinants of the use of multiple banking relationships during a period of financial and economic crises. Using a unique dataset provided by a survey completed by the CEOs of French SMEs, we analyzed the probability for SMEs to engage in single or multiple banking relationships. We used two analytical frameworks: the first was based on firms' characteristics, and the second was based on trust as a primary indicator of the quality of banking relationships.

We first show the role played by the characteristics of the firm, including its age and size, and the role of performance in the decision to engage in multiple banking relationships. It appears that well-performing firms are more likely to develop multiple banking relationships to protect themselves from the extraction of informational rent by their main banks. In line with some empirical studies, we show that innovative firms are more inclined to engage in multiple banking relationships, perhaps because they exhibit higher risk, few tangible assets, thus their main bank wants to share this risk with other lenders. More originally, we also highlight the strong role played by the quality of the banking relationship. Our proxy for the consequences of trust plays a role in the decision to develop multiple banking relationships: when the manager only tries to find in a transaction with the lowest interest rate, he is more likely to develop multiple banking relationships. Conversely, when he believes in the virtue of a long-term relationship, he is more likely to develop a relationship with a single bank. Contrary to our expectations, the knowledge of CEOs regarding the rating process for the firms' main banks appears to be a double-edged sword for banks: SMEs that benefit from transparency appear to be more likely to engage in multiple banking relationships. This result questions whether transparency is used by SMEs as a tool to boost competition between lenders rather than being valued as an antecedent of trust. We also highlight the impact of interesting control variables. We find that the geographical distance affects the use of multiple banking relationships: when the manager is closer to his loan officer, he is less engaged in multiple banking relationships. Finally, CEO tenure also appears to have a positive impact on the likelihood of firms to develop multiple banking relationships.

Previous results have to be interpreted with caution because of the small sizes of the samples used. We propose several promising extensions that could be performed on larger samples. First, the impact of CEO demographics, including other characteristics such as gender, education or to what extent the firm is family-owned, on the use of multiple banking deserves to be analyzed in more depth (see D'Aurizio, Oliviero, and Romano 2015 for the interaction between the status of family firms and the

production of soft information). Another extension is to focus, for fragile SMEs, on the number of banks and on the composition of the banking pool in the case of multiple banking relationships. In France, banks often request intervention from the state owned bank BPI (Banque Publique d'Investissement) to co-finance when granting a loan to fragile SMEs. In this framework, multiple banking is a constraint imposed by the main bank rather than a choice of the firm.

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Table 1
Composition of the sample

Steps	Sample size
SMEs that opened the email	901
SMEs that answered the questionnaire (after phoning)	94
SMEs with missing data in ALTARES	(13)
Sample of SMEs with accounting data	81
SMEs with missing responses about the banking relationship	(25)
Sample of SMEs with data on the banking relationship	69

Table 2
Descriptive statistics

	Observations	Mean	*Median*	St.Dev.	Percentage
Age *(in years*)	94	25.85	*21.20*	14.45	
Workforce	94	36.44	*31.00*	29.20	
Assets *(in M€)*	81	4.05	*2.60*	4.86	
Sales *(in M€)*	81	7.07	*4.25*	7.51	
Leverage	81	0.65	*0.64*	0.30	
Firms with several banks (Multibank)	94				78.90
Firms by business sector	94				43.10
Industrial					24.30
Services					17.90
Trade					4.20
Transportation					10.50
Building					
Innovative firms	94				16.80

The sample consists of 94 French SMEs for the year 2011. Variable definitions are provided in Appendix A. This table reports means, medians, and standard deviations.

Table 3
Univariate analysis of firms' characteristics

	Full sample			**SMEs with multiple banking Multibank=1**		**SMEs with one bank Multibank = 0**			
	Mean	*Median*	St.Dev.	Mean	*Median*	Mean		*Median*	
Observations	81			64		17			
Age	26.719	*21.452*	14.640	27.764	*22.011*	22.788		*19.518*	*
Workforce	36.300	*31.500*	26.340	36.594	*32.500*	35.125		*31.000*	
Assets	4.510	*2.601*	4.866	5.116	*3.385*	2.279	**	*1.450*	**
Sales	7.071	*4.259*	7.511	8.062	*4.869*	3.340	**	*3.066*	*
Growth	0.086	*0.070*	0.222	0.083	*0.079*	0.097		*0.029*	
ROA	0.025	*0.032*	0.122	0.020	*0.033*	0.044		*0.000*	
ROE	-0.004	*0.075*	0.722	0.013	*0.075*	- 0.070		*0.087*	
VIROE	0.091	*0.101*	0.111	0.094	*0.099*	0.082		*0.132*	
Liquidity	1.713	*1.451*	0.921	1.682	*1.414*	1.832		*1.492*	
Leverage	0.653	*0.647*	0.305	0.667	*0.660*	0.601		*0.576*	
Innovation	0.825		0.382	0.794		0.940	*		
LT debt-need	0.429		0.498	0.459		0.313			
Working capital	0.167	*0.098*	0.341	0.197	*0.136*	0.053	*	*0.059*	*
Invest-need	0.309		0.465	0.266		0.470	*		

The sample consists of 81 French SMEs for the year 2011. The variable definitions are provided in Appendix A.
This table reports the means, medians, standard deviations, and tests of differences in the means and medians between firms with one bank and firms with several banks (Student t-statistics tests for differences in means and Wilcoxon z-statistics tests for differences in medians).
***, **, * denote that the difference in mean (median) for characteristics of the firms with one bank versus several bank samples is significant at the 1%, 5%, or 10% levels, respectively.

Table 4
Univariate analysis on banking relationship characteristics

	Full sample	**SMEs with multiple banking Multibank=1**	**SMEs with one bank Multibank = 0**
	Mean	Mean	Mean
Observations	69	59	10
Rating knowledge	0.377	0.424	0.100**
Bank knowledge	0.551	0.593	0.300*
Frequency	0.806	0.825	0.700
Rate	0.303	0.250	0.600*
Distance	0.449	0.508	0.100**
CEO tenure	0.895	0.931	0.778*

The sample consists of 69 French SMEs for the year 2011. Variable definitions are provided in Appendix A.
This table reports means, medians, standard deviations, and tests of differences in means (Student t-statistics) between firms with one bank and firm with several banks.
***, **, * denote that the difference in means for characteristics of the firms with one bank versus several bank samples is significant at 1%, 5%, or 10%, respectively.

Table 5
Multiple banking and firms' characteristics (Framework one)

Models	(Ia)	(Ib)	(Ic)	(IIa)	(IIb)	(IIc)
Assets	0.242***	0.218***	0.186***	0.253***	0.262***	0.192***
	(2.597)	(2.677)	(2.599)	(2.662)	(2.745)	(2.338)
ROE	0.740***	0.751***	0.609***			
	(2.729)	(2.848)	(2.648)			
VIROE				2.208**	1.952**	2.117**
				(2.248)	(2.559)	(2.334)
Leverage	3.425***	2.812***	2.190***	3.727**	4.094***	3.666***
	(2.978)	(3.072)	(2.662)	(3.152)	(3.725)	(3.712)
Innovation	−1.384*	−1.638**	−1.532**	−1.069**	−0.892*	−1.358***
	(−1.925)	(−2.030)	(−2.444)	(−2.160)	(−1.873)	(−2.946)
Working capital	3.771***	3.637**	1.770*	3.932**	3.782***	4.159***
	(2.160)	(2.432)	(1.818)	(2.355)	(2.759)	(3.476)
Invest-need	−0.968**	−0.971**	−1.019***	−0.649	−0.942**	−1.153***
	(−2.068)	(−2.396)	(−2.751)	(−1.424)	(−2.301)	(−2.801)
Constant	−0.788	−0.107	0.392	1.213**	−1.930*	−1.089
	(0.474)	(−0.107)	(0.4186)	(2.373)	(−1.847)	(−1.216)
Observations	80	94	94	66	94	94
McFadden R^2	33.19%	34.16%	26.42%	36.96%	36.28%	36.47%
AIC	69.29	78.07	85.60	58.60	76.00	75.82
Chi square♮	27.46***	33.24***	25.71***	26.15***	35.31***	35.49***
	(0.01%)	(0.00%)	(0.03%)	(0.02%)	(0.00%)	(0.00%)
Rate of correct classification	81.2%	84.0%	83.0%	83.3%	81.9%	86.2%

The full sample consists of 94 French SMEs for the year 2011. The dependent variable is the binary variable Multibank. Variable definitions are provided in Appendix A.
The probit regressions are based on standard errors adjusted for heteroskedasticity. The z-values are in parentheses.
Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.
♮ Likelihood-ratio test, probabilities are in parentheses.

Table 6
Multiple banking and banking relationship characteristics (Framework two)

Models	**(IIIa)**	**(IIIb)**	**(IIIc)**	**(IVa)**	**(IVb)**	**(IVc)**
Rating knowledge	1.567***	1.361***	2.047***	1.165**	1.184***	1.686***
	(3.080)	(3.165)	(3.890)	(1.993)	(2.664)	(2.743)
Frequency	0.922	1.058**	0.879			
	(1.543)	(2.167)	(1.343)			
Rate	−0.830*	−1.025***	−1.532***	−0.929*	−0.889***	−1.539***
	(−1.891)	(−2.859)	(−3.837)	(−1.878)	(−2.589)	(0.0003)
Distance	1.348*	1.646**	1.691**	1.243**	1.353***	1.479**
	(1.647)	(2.121)	(2.052)	(1.994)	(2.631)	(2.507)
CEO tenure				1.408***	0.505	1.320**
				(1.987)	(0.880)	(2.274)
Constant	-0.127	-0.333	-0.0623	-0.731	0.106	-0.451
	(-0.231)	(-0.755)	(-0.102)	(-1.197)	(0.187)	(-0.888)
Observations	65	94	94	50	94	94
McFadden R^2	31.39%	34.93%	50.41%	37.63%	33.61%	48.30%
AIC	48.30	73.32	58.26	39.40	74.61	60.31
Chi square♮	17.52	33.99	49.05	17.74%	32.70	47.00
	(0.15%)	(0.00%)	(0.00%)	(0.14%)	(0.00%)	(0.00%)
Rate of correct classification	89.2%	86.2%	92.6%	90.0%	85.1%	91.5%

The full sample consists of 94 French SMEs for the year 2011. The dependent variable is the binary variable Multibank. Variable definitions are provided in Appendix A.
The probit regressions are based on standard errors adjusted for heteroskedasticity. The z-values are in parentheses.
Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.
♮ Likelihood-ratio test, probabilties are in parentheses.

Table 7
Multiple banking, firms' characteristics and banking relationship characteristics (combined models)

Models	(Va)	(Vb)	(VIa)	(VIb)	(VIIa)	(VIIb)	(VIIIa)	(VIIIb)
Assets	0.253**	0.208	0.159**	0.036	0.234	0.203	0.136	0.063
	(2.263)	(1.361)	(2.088)	(0.485)	(1.612)	(1.411)	(1.503)	(0.764)
ROE	1.932***	2.976***			1.123***	2.675***		
	(3.444)	(2.957)			(2.632)	(3.161)		
VIROE			2.426***	3.330***			2.523***	3.297***
			(2.789)	(2.586)			(3.041)	(2.710)
Leverage	3.750***	4.392***	3.371***	3.202***	5.140***	4.419***	3.931***	3.675***
	(3.011)	(3.217)	(2.864)	(2.718)	(3.045)	(3.389)	(3.517)	(3.243)
Innovation	−4.422**	−6.774**	-1.288*	-1.685*	-4.903**	-5.885**	-1.243*	-1.524*
	(−2.450)	(−2.313)	(-1.865)	(-1.905)	(-2.207)	(-2.208)	(-1.801)	(-1.895)
Working capital	5.380**	2.955***	3.371**	4.137**	6.062**	2.647**	4.039**	4.053**
	(2.536)	(2.603)	(2.345)	(2.063)	(2.300)	(2.204)	(2.287)	(2.339)
Invest-need	−1.569**	−1.839***	-1.117**	-1.060*	-2.084***	-1.699***	-1.129**	-1.093**
	(−2.437)	(−2.941)	(-2.138)	(-1.760)	(-2.578)	(-2.584)	(-2.248)	(-2.128)
Rating knowledge	1.726***	2.571***	1.347***	1.825***	1.347*	2.161**	0.848	1.145*
	(3.266)	(3.062)	(3.126)	(2.919)	(1.901)	(2.326)	(1.388)	(1.710)
Frequency	1.778***	1.324	1.156**	1.205*				
	(2.818)	(1.600)	(1.964)	(1.754)				
Rate	− 0.984**	−2.305***	-0.707	-1.632***	-1.497***	-2.413***	-0.920**	-1.596***
	(−2.155)	(−4.195)	(-1.579)	(-3.159)	(-3.021)	(-4.209)	(-2.015)	(-3.122)

Distance	2.183***	2.509***	1.917**	2.191***	2.138***	2.088***	1.693***	1.826***
	(3.016)	(3.340)	(2.468)	(2.683)	(3.045)	(3.087)	(3.037)	(2.950)
CEO tenure					-0.126	1.255*	0.132	1.381**
					(-0.220)	(1.777)	(0.231)	(2.369)
Constant	0.285	3.251	-2.158*	-1.297	1,88073	2.481	-1.509	-1.905
	(0.159)	(1.224)	(-1.848)	(-0.959)	(1.049)	(0.956)	(-1.354)	(-1.541)
Observations	94	94	94	94	94	94	94	94
McFadden R^2	62.21%	71.84%	57.47%	69.21%	61.06%	68.28%	58.04%	66.59%
AIC	58.77	49.40	63.39	51.96	59.89	52.86	62.83	54.51
Chi square♮	60.53	69.91	55.92	67.35	59.42	66.45	56.48	64.80
(probability)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)	(0.00%)
Rate of correct classification	93.6%	94.7%	90.4%	94.7%	92.6%	94.7%	88.3%	93.6%

The full sample consists of 94 French SMEs for the year 2011. The dependent variable is the binary variable Multibank. Variable definitions are provided in Appendix A. The probit regressions are based on standard errors adjusted for heteroskedasticity. The z-values are in parentheses.
Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.
♮Likelihood-ratio test, probabilties are in parentheses.

Table 8

Comparison of the goodness of fit values of the models derived from framework one, models derived from framework two, and combined models

	Models	Framework one		Framework two		Combined models			
		I	II	III	IV	V	VI	VII	VIII
Multiple Imputation	*McFadden R^2*	34.16%	36.28%	34.93%	33.61%	62.21%	57.47%	61.06%	58.04%
	AIC	78.07	76.00	73.32	74.61	58.77	63.39	59.89	62.83
	BIC	95.87	93.81	86.04	87.32	86.75	91.37	87.87	90.80
	Rate of correct classification	84.0%	81.9%	86.2%	85.1%	93.6%	90.4%	92.6%	88.3%
Regression Imputation	*McFadden R^2*	26.42%	36.47%	50.41%	48.30%	71.84%	69.21%	68.28%	66.59%
	AIC	85.60	75.82	58.26	60.31	49.40	51.96	52.86	54.51
	BIC	103.40	93.62	70.97	73.02	77.38	79.94	80.84	82.49
	Rate of correct classification	83.0%	86.2%	92.6%	91.5%	94.7%	94.7%	94.7%	93.6%

The models are run on the entire sample (94 French SMEs for the year 2011) with imputation of the missing variables. .
For each model, we provide the McFadden R^2, AIC (Akaike Criterion), BIC (Schwarz Criterion), and the rate of correct classification.

Appendix A
Variable index: definitions

Variable	Definition	Source
Multibank	Dummy variable that equals 1 if the SME is engaged in a multiple banking relationship and 0 otherwise	SURVEY
Age	Age of the SME (years) at the time the survey was completed	ALTARES
Workforce	Number of employees in 2011	ALTARES
Assets	Total assets, in million euros (M€) in 2011	ALTARES
Sales	Net sales, in million euros (M€) in 2011	ALTARES
Growth	One-year sales growth (2010-2011)	ALTARES
ROA	Return on assets 2011	ALTARES
ROE	Return on equity 2011	ALTARES
VIROE	The average value of ROE computed over a 4-year (2007-2010) period	ALTARES
Liquidity	Ratio of current assets to current liabilities	ALTARES
Leverage	Ratio of debts to total assets	ALTARES
Innovation	Dummy variable that equals 1 if the SME answered "no" to the question "Is your firm innovative according to the definition of the French Tax Code?" and 0 otherwise	SURVEY
LT debt-need	Dummy variable that equals 1 if the SME answered "yes" to the question "Has your firm applied for a long-term loan since 2007?" and 0 otherwise	SURVEY
Working capital	Ratio of working capital to net sales	ALTARES
Invest-need	Dummy variable that equals 1 if the SME answered "yes" to the question "Did your firm invest since the beginning of the crisis in 2007?" and 0 otherwise	SURVEY
Rating knowledge	Dummy variable that equals 1 if the SME answered "yes" to the question "Do you know the criteria used by your bank in the rating process?" and 0 otherwise	SURVEY
Bank knowledge	Dummy variable that equals 1 if the manager thinks that he has knowledge about how a bank works, and 0 otherwise	
Frequency	Dummy variable that equals 1 if the SME answered "yes" to the question "Do you have exchanges on a weekly basis with the loan officer of your main bank?" and 0 otherwise	SURVEY
Rate	Dummy variable that equals 1 if the SME answered "no" to the question "Do you systematically look for the lower interest rate when applying for credit?" and 0 otherwise	SURVEY
Distance	Dummy variable that equals 1 if the SME answered "yes" to the question "Is your loan officer located in a business center?" and 0 if it is located in a bank branch	SURVEY
CEO tenure	Dummy variable that equals 1 if the CEO started in his position more than 5 years ago and 0 otherwise	SURVEY

Appendix B
Pearson correlations for quantitative variables

	Age	Workforce	Assets	Sales	Growth	ROA	ROE	VIROE	Liquidity	Leverage	Working capital
Age	1	-0.013	0.104	0.124	-0.107	-0.064	0.099	0.059	0.052	0.028	0.018
Workforce		1	0.305***	0.336***	-0.042	-0.196*	-0.097	-0.063	-0.039	0.115	-0.144
Assets			1	0.735***	-0.056	0.060	-0.039	0.006	0.104	-0.283**	0.466***
Sales				1	0.068	0.013	0.013	0.034	-0.035	-0.064	0.022
Growth					1	0.202*	-0.021	0.007	0.017	-0.066	-0.225*
ROA						1	0.026	0.382***	0.162	-0.439***	0.046
ROE							1	0.128	0.021	-0.014	0.044
VIROE								1	0.096	-0.004	-0.029
Liquidity									1	-0.215*	-0.015
Leverage										1	-0.289***
Working capital											1

The sample consists of 81 French SMEs for the year 2011. Variable definitions are provided in Appendix A.
***, **, and * indicate that the correlation coefficient is significant at the 1%, 5%, or 10% level, respectively (Pearson correlation test).

Appendix C
P-value of Chi-2 dependence tests for qualitative variables

	LT debt-need	Invest-need	Rating knowledge	Bank knowledge	Frequency	Rate	Distance	CEO tenure
Innovation	1.754	0.091	0.281	0.053	0.329	0.731	0.247	1.336
LT debt-need		0.402	0.132	0.527	0.000	2.499	03029	0.140
Invest-need			0.473	0.053	0.697	1.758	2.243	0.031
Rating knowledge				3.380*	0.367	0.004	1.341	2.935*
Bank knowledge					1.513	1.425	0.880	1.258
Frequency						0.000	0.373	7.325***
Rate							2.764	0.001
Distance								1.258

The sample consists of 69 French SMEs for the year 2011. Variable definitions are provided in Appendix A.
***, ** and * indicate that the correlation coefficient is significant at the 1%, 5%, or 10% level, respectively.